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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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03/12/2001

Iraj Saniee

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LUCENT TECHNOLOGIES INC.

DOCKET ADMINISTRATOR

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HOLMDEL, NJ 07733

EXAMINER

LI, SHI K

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/805,021

Applicant(s)

SANIEE ET AL.

Examiner

Shi K. Li

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Drawings***

1. The drawings are objected to because in FIG. 1 the legend for nodes 2, 4 and nodes 3, 8 should be swapped. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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3. Claims 1-8, 12-18 and 21-24 are rejected under 35 U.S.C. 102(a) as being anticipated by Baworntummarat et al. (C. Baworntummarat et al., "On the Comparison of Optical WDM Mesh Network Protection Strategies", MILCOM 2000, 22-25 October 2000).

Regarding claims 1-2 and 21-23, Baworntummarat et al. discusses protection strategies for WDM mesh network including minimal cost, disjoint path and single link basis (see Section II, *Protection Strategies*). Baworntummarat et al. teaches in Section II(B), *Disjoint Path (DJP)* to choose two physically disjoint paths, one as active path for supporting traffic demands in normal operation whereas the other as backup (protection). Baworntummarat et al. further teaches to choose node disjoint paths. Note that two node-disjoint paths form a ring, and node-disjoint implies link-disjoint as indicated by claims 2 and 23.

Regarding claim 3, Baworntummarat et al. teaches in Section V(C), *Comparison of Protection Strategies* (p. 889) to model traffic demands as five levels ranging from 1 to 5 and the traffic volume of level i is defined as i times the total number of paths.

Regarding claim 4, Baworntummarat et al. teaches in p. 886, right col., second paragraph to use one or more optical fibers for each link and that in wavelength path (WP) a single wavelength is choose for all links along the entire physical route. This implies a wavelength is assigned to a path.

Regarding claim 5, the working path and protection path form a ring.

Regarding claims 6-7, the method of Baworntummarat et al. is for optical network and Baworntummarat et al. teaches in p. 886, right col., second paragraph to assign a wavelength to a path.

Regarding claims 8 and 12, Baworntummarat et al. teaches in Section II(B), *Disjoint Path (DJP)* that in DJP, the amount of spare capacity required is not necessarily 100% as the capacity reserved as restoration paths can be shared among active paths as long as active paths are physical disjoint. Baworntummarat et al. discusses in p. 889 right col., last paragraph cost related to number of wavelength channels.

Regarding claim 13, Baworntummarat et al. teaches in p. 886, right col., second paragraph to use one or more optical fibers for each link and to assign a wavelength to a path.

Regarding claim 14, Baworntummarat et al. teaches in p. 889 right col., last paragraph that a fiber can carry a number of wavelengths.

Regarding claims 15-16, Baworntummarat et al. teaches in p. 886, right col., second paragraph to use one or more optical fibers for each link and to assign a wavelength to a path. Baworntummarat et al. teaches in p. 889 right col., last paragraph that a fiber can carry a number of wavelengths. Baworntummarat et al. illustrates in FIG. 1 sharing of a link for two rings.

Regarding claim 17, Baworntummarat et al. teaches in p. 889 right col., last paragraph that the number of wavelength a fiber can carry varies from 1 to 72. When a fiber carries one wavelength, each optical fiber on a given link of a ring is allocated exclusively to one ring.

Regarding claims 18 and 24, Baworntummarat et al. teaches in Section II(B), *Disjoint Path (DJP)* link disjoint paths. Two link disjoint paths between a pair of nodes form a plurality of rings if they have one or more common intermediate nodes. When a link fails, the link disjoint path is used for carry traffic demand.

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Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 9-11 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baworntummarat et al. (C. Baworntummarat et al., "On the Comparison of Optical WDM Mesh Network Protection Strategies", MILCOM 2000, 22-25 October 2000).

Baworntummarat et al. has been discussed above in regard to claims 1-8, 12-18 and 21-24. Regarding claim 9, the difference between Baworntummarat et al. and the claimed invention is that Baworntummarat et al. does not discuss cost of port or optical termination units. Office Notice is taken that both the concept and the advantages of reducing the number of ports or termination units are well known and expected in the art. It would have been obvious to choose paths that have fewer number of termination units so as to reduce cost and increase reliability.

Regarding claim 10, the difference between Baworntummarat et al. and the claimed invention is that Baworntummarat et al. does not teach variation of cost as wavelengths are assigned progressively. However, it is well known in the art that adding a demand (i.e., add a path/wavelength in a network) includes adding transmitter and receiver. If there are already a large number of already-placed wavelength channels, the newly added demand can share the multiplexer/demultiplexer and fiber links over most of links in the path and, therefore, the cost per demand decreases. If the number of already-placed wavelength channels reaches the full capacity of all existing fibers, a new fiber has to be added and the cost jumps to a high value.

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Regarding claim 11, Office Notice is taken that both the concept and the advantages of reducing the number of ports or termination units are well known and expected in the art. It would have been obvious to choose paths that have fewer number of termination units so as to reduce cost and increase reliability.

Regarding claim 19, it is obvious that the method of Baworntummarat et al. can be applied to each ring if the working path and backup path form a number of rings.

Regarding claim 20, it is obvious that a working path must have enough capacity to carry all the traffic and the protection path must also have enough capacity to carry all the traffic.

Response to Arguments

6. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(a). Fumagalli et al. (A. Fumagalli et al., "Survivable Networks Based on Optimal Routing and WDM Self-Healing Rings", IEEE, 1999) discusses the use of self-healing WDM rings for providing survivability in the optical layer and provides an integer linear programming (ILP) formulation of the problem.

(b). Ellinas et al. (G. Ellinas et al., "Protection Cycles in Mesh WDM Networks", IEEE Selected Journal on Selected Areas in Communications, Vol. 18, No. 10, October 2000) discusses method for finding protection cycles in a mesh network and implementation of automatic protection switching (APS) using the protection cycles.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 703 305-4341. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl


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